

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

The Empire District Electric Company's)	
2007 Utility Resource Filing Pursuant to 4)	Case No. EO-2008-0069
CSR 240 - Chapter 22)	

**MISSOURI DEPARTMENT OF NATURAL RESOURCES
ENERGY CENTER REVIEW OF
EMPIRE DISTRICT ELECTRIC COMPANY'S
INTEGRATED RESOURCE PLANNING
FILING**

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I. Summary

On September 5, 2007, Empire District Electric Company (“Empire”) filed a Utility Resource Filing Pursuant to 4 CSR 240.22 with the Missouri Public Service Commission (“Commission”). The Department of Natural Resources Energy Center (“MDNR”) submits the following comments in response to that filing.

MDNR participated in informational meetings with representatives of Empire and other parties on November 1, 2, and 13, 2007. Topics included, but were not limited to, demand-side resources, supply-side resources, risk and integration.

In Commission’s Case No. EE-2008-0025, Empire requested waivers from an array of elements of the Commission’s rule regarding integrated resource plans.¹ The Commission granted Empire’s request on September 9, 2007.

After reviewing the filing made by Empire and information provided by Empire to MDNR, MDNR wishes to bring several deficiencies in the filing to the attention of the Commission:

- Paragraph 4 CSR 240-22.040(1) - Empire’s filing is deficient in its failure to include energy efficiency improvements.
- Paragraph 4 CSR 240-22.040(2) - Empire’s filing may be deficient in ranking supply side options.
- Paragraph 4 CSR 240-22.040(4) - Empire’s filing may be deficient in considering extending the life and the refurbishment of current plants.
- Paragraph 4 CSR 240-22.050(1) - Empire may have failed to identify a menu of energy efficiency and energy management measures.
- Paragraph 4 CSR 240-22.050(6) - Empire failed to consider a broad universe of DSM programs.

¹ 4 CSR 240-22.030 (1) (A) 1; 4 CSR 240-22.030 (1) (A) 2; 4 CSR 240-22.030 (1) (D) 1; 4 CSR 240-22.030 (1) (D) 2; 4 CSR 240-22.030 (2) (C); 4 CSR 240-22.030 (3); 4 CSR 240-22.030 (3) (A); 4 CSR 240-22.030 (3) (A) 1; 4 CSR 240-22.030 (3) (A) 3; 4 CSR 240-22.030 (3) (A) 4; 4 CSR 240-22.030 (3) (B); 4 CSR 240-22.030 (3) (B) 1; 4 CSR 240-22.030 (3) (B) 2; 4 CSR 240-22.030 (4) (A); 4 CSR 240-22.030 (4) (B); 4 CSR 240-22.030 (5) (B) 2; 4 CSR 240-22.030 (5) (B) 2 B; 4 CSR 240-22.030 (5) (B) 2 C; 4 CSR 240-22.030 (8) (A) 2 B; 4 CSR 240-22.030 (8) (B) 2; 4 CSR 240-22.030 (8) (E) 1; 4 CSR 240-22.040 (3); 4 CSR 240-22.040 (6); 4 CSR 240-22.040 (7); 4 CSR 240-22.050 (3); 4 CSR 240-22.050 (3) (A); 4 CSR 240-22.050 (3) (B); 4 CSR 240-22.050 (3) (B) 1; 4 CSR 240-22.050 (3) (B) 2; 4 CSR 240-22.050 (3) (C); 4 CSR 240-22.050 (3) (C) 1; 4 CSR 240-22.050 (3) (C) 2; 4 CSR 240-22.050 (3) (C) 3; 4 CSR 240-22.050 (3) (D); 4 CSR 240-22.050 (3) (E); 4 CSR 240-22.050 (3) (F); 4 CSR 240-22.050 (3) (G); 4 CSR 240-22.050 (4); 4 CSR 240-22.050 (5); 4 CSR 240-22.050 (11) (A); 4 CSR 240-22.050 (11) (B); 4 CSR 240-22.050 (11) (C); and 4 CSR 240-22.050 (11) (E)

- Paragraph 4 CSR 240-22.060(3) – Empire failed to use "appropriate combinations of candidate demand-side and supply side resources" when defining the alternative resource plans that will be subjected to integration analysis
- 4 CSR 240-22.070 Statement of Purpose, and Paragraphs 4 CSR 240-22.070(1), (2), (3) and (5) – Empire fails to clearly and unambiguously identify “critical uncertain factors.”
- Paragraph 4 CSR 240-22.070(10) – Empire fails to provide a complete resource acquisition strategy.

II. Analysis of 4 CSR 240-22.040 Supply-Side Resource Analysis

A. Paragraph 4 CSR 240-22.040(1)

Paragraph 4 CSR 240-22.040(1) states that the analysis of supply-side resources begins with the identification of a variety of potential supply-side resource options that the utility can reasonably expect to develop and implement solely through its own resources or for which it will be a major participant. Options include new plants using existing generation technologies; new plants using new generation technologies; life extension and refurbishment at existing generating plants; enhancement of the emission controls at existing or new generating plants; purchased power from utility sources, cogenerators or independent power producers; efficiency improvements which reduce the utility's own use of energy; and upgrading of the transmission and distribution systems to reduce power and energy losses.²

Empire states that the options it considered fall into three categories: existing resources, committed resource, and new resources.³ Empire's existing resources include coal fired units, natural gas combustion turbines (CT), natural gas or oil CTs, hydroelectric, combined cycle units (CC), and long term purchase power agreements for coal fired generation and wind generation. Its committed resources consist of coal fired generators and wind generation. The potential new resources identified by Empire fall into two categories: conventional resources (pulverized coal (PC), CT, CC, nuclear, distributed generation, integrated gasification CC, atmospheric circulating

² 4 CSR 240-22.040(1) "The analysis of supply-side resources shall begin with the identification of a variety of potential supply-side resource options which the utility can reasonably expect to develop and implement solely through its own resources or for which it will be a major participant... options include new plants using existing generation technologies; new plants using new generation technologies; life extension and refurbishment at existing generating plants; enhancement of the emission controls at existing or new generating plants; purchased power from utility sources, cogenerators or independent power producers; efficiency improvements which reduce the utility's own use of energy; and upgrading of the transmission and distribution systems to reduce power and energy losses...."

fluidized bed, conversion of Riverton 12 from a CT to a CC, and compressed air energy storage (CAES)) and renewable resources (wind generators and biomass using chicken and turkey waste).

B. Deficiencies Associated with Paragraph 4 CSR 240-22.040(1)

Empire's filing is deficient in its failure to include energy efficiency improvements. Empire makes no mention of any such improvements being considered.

Empire's filing is deficient in considering "existing generation technologies" and "new generation technologies." Empire failed to consider generation from some renewable resources: landfill gas (LFG) and solar-based resources. Generation from LFG is a proven technology which can cost effectively utilize an energy resource that is otherwise wasted. In Missouri alone, three new LFG generation plants have been installed or committed during the past two years. Empire's failure to consider the potential role of LFG generation in meeting resource requirements is a deficiency in the filing. Empire also failed to include any solar-based, non-dispatchable renewable technologies such as photovoltaic (PV) and solar thermal generation resources in the options considered.

Empire's filing is also deficient in its failure to consider a full range of biomass resources. Empire limited its consideration of biomass resources to only chicken and turkey waste combined with wood waste. Although Empire states that chicken and turkey waste is a prevalent source for biomass in its territory, Empire does not state if it considered any other potential feedstocks. Empire also should have considered options for co-firing biomass in existing coal-fired plants, or in a PC plant. Another biomass technology that Empire appears to have failed to consider is the introduction of gasified biomass into a PC plant as an overburn stage. This technology has a number of potential benefits including NO_x reduction.

³ "2007-2026 Integrated Resource Plan for The Empire District Electric Company"; Volume III Supply-Side

C. Proposed Remedy for Deficiencies Associated with Paragraph 4 CSR 240-22.040(1)

In all future IRP filings, Empire should analyze the dispatchable renewable resources discussed above: landfill gas generation and additional biomass technologies. Empire should also analyze solar-based non-dispatchable renewable technologies such as PV and solar thermal generation resources. Empire should also analyze potential energy efficiency improvements to existing generation resources. All such analysis should be detailed in future IRPs.

D. Paragraph 4 CSR 240-22.040(2)

Paragraph 4 CSR 240-22.040(2) states that the supply side options shall be subjected to a preliminary screening analysis to provide an initial ranking of the options based on the relative annualized utility costs and the environmental costs, as well as to eliminate options with significant disadvantages in utility costs, environmental costs, operational efficiency, etc.

Empire did not rank these options. Empire states instead that the methodology used in its optimization model makes it unnecessary to rank the supply-side resource options at this stage, and it subjected all of these supply-side resources options except CAES to its optimization model. Empire states that it was unable to identify any locations in its territory suitable for CAES, and was unable to determine adequate cost estimates for construction and operation.⁴

E. Deficiencies Associated with Paragraph 4 CSR 240-22.040(2)

Empire's filing is deficient in ranking the options. However, there does not appear to be any harm in having omitted this since all options were carried forward into the model. Empire's filing is

Analysis (4 CSR 240-22.040), pages 22-45.

⁴ "2007-2026 Integrated Resource Plan for The Empire District Electric Company"; Volume III Supply-Side Analysis (4 CSR 240-22.040), page 47.

also deficient in failing to detail the process used to eliminate one option, CAES, from further consideration.

F. Proposed Remedy for Deficiencies Associated with Paragraph 4 CSR 240-22.040(2)

In all future IRP filings, Empire should detail the process used to eliminate an option. For example, in this IRP filing, Empire should have detailed the process it used to determine that there are no suitable locations for CAES, which was the basis for removing this supply side resource from further consideration.

G. Paragraph 4 CSR 240-22.040(4)

Paragraph 4 CSR 240-22.040(4) directs the utility to “identify and analyze opportunities for life extension and refurbishment of existing generation plants, taking into account their current condition to the extent that it is significant in the planning process.” Empire detailed its analysis of plant retirements and possible upgrades for emissions control. Empire also detailed the conversion of Riverton 12 from a CT to a CC.

H. Deficiencies Associated with Paragraph 4 CSR 240-22.040(4)

Empire’s filing may be deficient in considering extending the life and the refurbishment of current plants. Empire detailed its analysis of plant retirements and possible upgrades for emissions control. It is unclear from the filing if other types of conversions or upgrades to facilities were considered.

I. Proposed Remedy for Deficiencies Associated with Paragraph 4 CSR 240-22.040(4)

In all future IRP filings, Empire should consider and analyze upgrades to all plants and detail that analysis.

III. Analysis of 4 CSR 240-22.050 Demand-Side Resource Analysis

A. Paragraph 4 CSR 240-22.050(1)

Paragraphs 4 CSR 240-22.050(1), 4 CSR 240-22.050(3), and 4 CSR 240-22.050(11) work in coordination with each other. The energy efficiency and energy management measures identified in 4 CSR 240-22.050(1) are subjected to a cost-effectiveness screening as detailed in 4 CSR 240-22.050(3), and those results are reported as required by 4 CSR 240-22.050(11)(A). Empire requested and received waivers from 4 CSR 240-22.050(3) and 4 CSR 240-22.050(11)(A), but did not request a waiver from 4 CSR 240-22.050(1). 4 CSR 240-22.050(1) directs the utility to develop a menu of energy efficiency and energy management measures that provide broad coverage of:

- All major customer classes including at least residential, commercial, industrial and interruptible.
- All significant decision-makers including at least those who choose building design features and thermal integrity levels, equipment and appliance efficiency levels, and utilization levels of energy-using capital stock.
- All major end uses including at least lighting, refrigeration, space cooling, space heating, water heating and motive power.
- Renewable energy sources and energy technologies that substitute for electricity at the point of use.

B. Deficiencies Associated with Paragraph 4 CSR 240-22.050(1)

In the course of preparing its IRP, Empire may have failed to identify the measures as required by 4 CSR 240-22.050(1), but since it was not required to report them, it is unknown if Empire developed a menu of energy efficiency and energy management measures as required in this rule.

C. Proposed Remedy for Deficiencies Associated with Paragraph 4 CSR 240-22.050(1)

In future IRP filings, Empire should detail its menu of energy efficiency and energy management measures.

D. Paragraph 4 CSR 240-22.050(4)

Paragraph 4 CSR 240-22.050(4) states that the utility “shall estimate the technical potential of each end-use measure that passes the screening test.” Empire requested a waiver from complying with this paragraph of the rule stating there is “a consensus that achievable potential is more valuable than technical potential,” and offered, instead, to:

1. Use the existing portfolio of DSM programs that was evaluated for the Customer Programs Collaborative (CPC) as a baseline representing achievable potential under a set of assumptions developed through the Empire CPC.
2. Update all assumptions including new avoided costs and retail rate forecasts,
3. add in demand response programs for all classes of customers to reflect increases in avoided costs and retail rates provided by Global Energy Decisions (GED) from the MIDAS Gold modeling.
4. Reanalyze all DSM programs and end uses (where applicable) under the new set of baseline assumptions generating new benefit cost (BC) results.
5. Develop new achievable potential estimates for all DSM programs under two different (higher) avoided cost and retail rate scenarios (medium and high environmental cost cases).
6. For each DSM program and end use (where applicable) modify participation rates, energy and demand savings, measure costs and program costs to reflect the higher avoided costs and retail rates for both the medium and the high environmental cost cases.
7. Re-estimate BC results for all programs under the medium and high cases.
8. Provide energy and demand savings at the program level by month by year (for all 20 years of the planning horizon) for all three scenarios (base, medium and high environmental cost cases) for inputs into MIDAS Gold models.
9. Evaluate the potential DSM programs on an equal basis as supply side resources in the MIDAS Gold model.

At the time Empire requested the waiver, MDNR agreed that there is a consensus that achievable potential is more valuable than technical potential. MDNR also noted that Empire’s suggested alternative assumed that the existing portfolio of DSM programs evaluated for the Customer Programs Collaborative (CPC) as a baseline representing achievable potential was a reasonable starting point. MDNR further agreed that, although this was not the optimal methodology for determining an achievable potential, given progress made by the CPC in

determining appropriate DSM programs for Empire, and the timeline for Empire to file this IRP, it was acceptable to use this as proxy.

MDNR also recommended and continues to recommend that Empire engage in a more thorough analysis of the whole array of energy efficiency measures to determine programs that are not currently included in Empire's portfolio of DSM programs in preparation for Empire's next IRP filing,. This would provide a more valid estimate of achievable potential by including programs or actions that would pass screening but are not included in the current portfolio of programs.

E. Paragraph 4 CSR 240-22.050(5)

Paragraph 4 CSR 240-22050(5) states that the utility "shall conduct market research studies, customer surveys, pilot demand-side programs, test marketing programs and other activities as necessary to estimate the technical potential of end-use measures and to develop the information necessary to design and implement cost-effective demand-side programs." Just as with Paragraph 4 CSR 240-22.050(4), Empire requested a waiver from complying with this paragraph of the rule. Empire asserted that given the waiver for the preceding paragraph and the timeframe Empire had to complete this IRP, the market research to support the estimates of the technical potential associated with DSM programs was not needed. However, Empire also stated that it believes that some level of market research for its specific service territory is important, and that it is planning to conduct a limited level of market research in the future.

MDNR did not object to Empire's request for variance. However, MDNR reiterates its comment from Case No. EE-2008-0025 that market research is a critical aspect of the design and implementation of cost-effective demand-side programs, and requests the Commission require Empire to provide details regarding its plans for market research: anticipated timeline for the

research, anticipated methodology, consultant to be used, etc. If these details have not yet been determined, Empire should be required to provide the details as soon as practicable.

F. Paragraph 4 CSR 240-22.050(6)

Paragraph 4 CSR 240-22.050(6) directs the utility to develop a set of potential demand-side programs that are designed to deliver an appropriate selection of end-use measures to each market segment. As discussed above, Empire relied on the existing portfolio of DSM programs that the CPC has decided to implement in Empire's territory in the next five years:

- Low Income Efficiency Program
- Low Income – New Home Program
- Home Performance with Energy STAR® Program
- Change a Light
- Residential High Efficiency Central Air Conditioning
- Energy STAR® Homes
- Online Energy Information and Analysis Program Using Nexus®
- Commercial & Industrial ("C&I") Custom Rebate
- Building Operator Certification Program

Empire added to this two additional programs to consider: Air Conditioner Cycling and C&I Peak Load Reduction. These programs formed the basis of Empire's potential DSM programs.

G. Deficiencies Associated with Paragraph 4 CSR 240-22.050(6)

Empire did not request a waiver for this section and therefore, should have considered a broader universe of DSM programs rather than limiting consideration to the list of possibilities that the CPC has developed. While it is true that Empire has agreed to give the authority to choose DSM programs to the CPC, and the CPC is conducting the analysis necessary to choose potentially effective DSM programs and to evaluate the programs for cost effectiveness, the purpose of the IRP rule is for the utility to take a "big picture" view of its planning horizon and explore for itself the complete array of possibilities.

Empire's DSM program portfolio approved by the CPC in May 2006, set out a 5-year implementation plan. For energy efficiency programs, the following annual budget figures represent approximately 0.4 percent increasing to 0.65 percent of Empire's total annual sales revenues (2004 sales):

Year 1	Year 2	Year 3	Year 4	Year 5
\$1,056,750	\$1,325,570	\$1,700,529	\$1,577,810	\$1,601,730

In Year 1 (part of 2006 and half of 2007) Empire expended approximately \$250,000.⁵ Estimated expenditures from July-December 2007, are an additional \$350,000.⁶ MDNR recognizes that it takes time to secure CPC approval, file tariffs, enter into contracts and initiate programs. However, MDNR urges Empire, in cooperation with the CPC, to implement and ramp up the approved programs on an expedited schedule so that the projected benefits to Empire and its customers from energy savings can be realized.

If implemented at the above funding levels, Empire projected the energy efficiency programs would result in a reduction of approximately 4.4 percent of load growth and 8.8 megawatts of net peak demand from cumulative savings over a 5-year period. In EO-2005-0263 MDNR recommended and continues to recommend the following targets for energy efficiency programs (not including demand response programs): (1) Annual investments of one percent of Missouri jurisdictional revenues; (2) Savings of 10 percent of growth in consumption between 2005 and 2009; and (3) Avoided capacity of 10 MW net peak demand between 2005 and 2009⁷.

⁵ Case No. ER-2008-0093, Direct Testimony of Sherrill L. McCormack, Schedule SLM-1

⁶ *Ibid.*

⁷ EO-2005-0263 Stipulation and Agreement Appendix G "Missouri Department of Natural Resources' Proposed Targets for Energy Efficiency Programs"

In addition to the current programs, DNR/EC believes that an ongoing and increasing commitment to energy efficiency beyond the initial 5-year portfolio will be necessary to realize the full positive effects of energy efficiency on energy consumption and capacity needs.

H. Proposed Remedy for Deficiencies Associated with Paragraph 4 CSR 240-22.050(6)

In future IRP filings, Empire should consider all possible DSM programs at a variety of commitment levels in an effort to identify all that could cost-effectively benefit Empire and its customers. New programs are being developed in a wide array of areas throughout the country. Information on the effectiveness of programs is being gathered and will be growing. For IRP purposes, Empire should consider as many DSM programs as possible at increasing levels of commitment in order to find as many potentially effective DSM programs for its unique situation and to maximize the potential energy savings for each market sector, and not rely solely on the CPC. MDNR also urges Empire, in cooperation with the CPC, to implement and ramp up the approved programs on an expedited schedule.

IV. Analysis of 4 CSR 240-22.060 Integration Analysis

A. Paragraph 4 CSR 240-22.060(3)

Paragraph 4 CSR 240-22.060(3), "Development of Alternative Resource Plans," requires the utility to "use appropriate combinations of candidate demand-side and supply-side resources to develop a set of alternative resource plans, each of which is designed to achieve one (1) or more of the planning objectives identified in 4 CSR 240-22.010(2)." Empire did not request any variance to requirements of 4 CSR 240-22.060(3).

The term "resource plan" is defined in 4 CSR 240-22.020(48) as follows: " Resource plan means a particular combination of demand-side and supply-side resources to be acquired according to a specified schedule over the planning horizon." From this definition it may be inferred that an alternative resource plan is specified by stating the specific combination of demand and supply side resources that would be acquired under the plan and the time schedule for acquiring them.

Empire states that it developed a base case resource plan, seven alternative resource plans and four additional resource plans that were "deemed to be contingency scenarios."⁸ Empire names the various alternative plans as follows, using the numbering scheme shown in parentheses:

- Base case (Plan 1)
- Alternative resource plans:
 - High fuel, market, and wind prices (Plan 2)
 - Low fuel and market prices (Plan 3)
 - High load (Plan 4)
 - Low load (Plan 5)
 - **Highly Confidential Information Removed**

⁸ Volume 5, Integrated Resource Analysis (4 CSR 240-22.060) Risk Analysis and Strategy Selection (4 CSR 240-22.070),Section 2.0. This document is hereafter cited as V-5.

- Base assumptions, nuclear available after 2020 (Plan 11)
- Base assumptions, no coal units after 2010 (Plan 12)
- Contingency scenarios:
 - Medium environmental costs (Plan 6)
 - High environmental costs (Plan 7)
 - No Riverton CC conversion (Plan 8)
 - **Highly Confidential Information Removed**

In V-5 Section 2.2 Empire states that the Capacity Expansion Model (CEM) of Global Energy Decisions "was used to determine the specific demand- and supply-side resources to be acquired under each Alternative Resource Plan." The filing states that "Empire chose not to eliminate from consideration any of the potential future DSM programs before they were modeled in" CEM.

In V-5 Section 2.3, Tables 12 and 13, Empire lists the demand-side and supply-side resources which were selected through this analysis as defining the seven Alternative Resource Plans. With one exception, the seven Alternative Resource Plans are defined as containing an identical package of DSM programs. Alternative Resource Plans 2, 4, 5, 9, 11 and 12 are defined as including the following DSM programs at identical funding levels:

- **Highly Confidential Information Removed**
- **Highly Confidential Information Removed**
- **Highly Confidential Information Removed**
- **Highly Confidential Information Removed**
- **Highly Confidential Information Removed**
- **Highly Confidential Information Removed**
- **Highly Confidential Information Removed**

Alternative Resource Plan 3 is also defined to contain the first five of these DSM programs. It does not include the **Highly Confidential Information Removed** or **Highly Confidential Information Removed** programs.

B. Deficiencies Associated with Paragraph 4 CSR 240-22.060 (3)

The rule requirement is that the utility use "appropriate combinations of candidate demand-side and supply side resources" when defining the alternative resource plans that will be subjected to integration analysis. Definition of "appropriate" is a matter of judgment. In MDNR's judgment, the combinations used by Empire are deficient because the demand side options specified for the alternative resource plans lack sufficient variety to provide a satisfactory analysis of long-term DSM program options.

C. Proposed Remedy for Deficiencies Associated with Paragraph 4 CSR 240-22.060(3)

Empire should agree to include a wider variety of demand side options and funding levels when developing Alternative Resource Plans to be subjected to integration analysis in future IRP filings. Specifically, the set of Alternative Resource Plans should include at least some plans with the base level of funding for DSM programs and other plans with a higher level of funding for at least some of these programs.

V. Analysis of 4 CSR 240-22.070 Risk Analysis and Strategy Selection

A. 4 CSR 240-22.070 Statement of Purpose and Paragraphs 4 CSR 240-22.070(1), (2), (3), and (5)

The rule states the purpose of 4 CSR 240-22.070 as follows: "This rule requires the utility to identify the critical uncertain factors that affect the performance of resource plans, establishes minimum standards for the methods used to assess the risks associated with these uncertainties and requires the utility to specify and officially adopt a resource acquisition strategy." Empire did not request any variance from the requirement to identify "critical uncertain factors" or from any other requirements in 4 CSR 240-22.070 that are based on identifying critical uncertain factors.

Throughout 4 CSR 240-22, there are numerous requirements that refer to the critical uncertain factors. These requirements are listed below. A logical first step in meeting these requirements is the unambiguous identification of the critical uncertain factors that will be subjected to the analysis..

- 4 CSR 240-22.070(1) The utility shall use the methods of formal decision analysis to assess the impacts of ***critical uncertain factors*** on the expected performance of each of the alternative resource plans developed pursuant to 4 CSR 240-22.060(3), to analyze the risks associated with alternative resource plans, to quantify the value of better information concerning the ***critical uncertain factors*** and to explicitly state and document the subjective probabilities that utility decision-makers assign to each of these uncertain factors. This assessment shall include a decision-tree representation of the key decisions and uncertainties associated with each alternative resource plan.
- 4 CSR 240-22.070(2) Before developing a detailed decision-tree representation of each resource plan, the utility shall conduct a preliminary sensitivity analysis to identify the ***uncertain factors that are critical*** to the performance of the resource plan.
- 4 CSR 240-22.070(3) For each alternative resource plan, the utility shall construct a decision-tree diagram that appropriately represents the key resource decisions and ***critical uncertain factors*** that affect the performance of the resource plan.
- 4 CSR 240-22.070 (5) The utility shall use the decision-tree formulation to compute the cumulative probability distribution of the values of each performance measure

specified pursuant to 4 CSR 240-22.060(2), contingent upon the *identified uncertain factors* and associated subjective probabilities assigned by utility decisionmakers....

There are three instances in V-5 in which Empire refers to "critical uncertain factors" These three instances are quoted below:

1. "The critical uncertain factor is the potential enactment of a carbon tax or carbon cap and trade legislation by the U.S. Congress." (V-5, p. ES-8)
2. "If Empire had the opportunity to conduct a research study that would evaluate each of the four critical uncertainties evaluated as part of the risk analysis, such a study could help by improving the probability assessments that were assigned to each of these outcomes." (V-5, p.ES-34).
3. "The critical uncertain factor is the potential enactment of a carbon tax or carbon cap and trade legislation by the U.S. Congress." (V-5, p. ES-52)

B. Deficiencies Associated with 4 CSR 240-22.070 Statement of Purpose and Subsections 4 CSR 240-22.070(1), (2), (3), and (5)

Empire's filing fails to clearly and unambiguously identify the critical uncertain factors in its risk analysis. The three references to critical uncertain factors in V-5 are cursory and inconsistent. In two instances, the text implies that there is one critical uncertain factor, identified as " potential enactment of a carbon tax or carbon cap." In the third instance, the text implies that there are four critical uncertain factors. These are not named but the context suggests that, in addition to enactment of a carbon tax or cap, they include market and natural gas prices, load forecast, and capital and transaction costs.

Explicit and unambiguous identification of the "critical uncertain factors" is not a trivial issue. As identified above, numerous requirements of 4 CSR 240-22.070 are specifically formulated in terms of the critical uncertain factors. If there are four critical uncertain factors, the requirements to be met are more extensive than if there is only one critical uncertain factor. As discussed below, this is particularly true with respect to rule requirements related to development of the resource acquisition strategy.

C. Proposed Remedy for Deficiencies Associated with 4 CSR 240-22.070 Statement of Purpose and Paragraphs 4 CSR 240-22.070(1), (2), (3), and (5)

Empire should clearly and unambiguously identify the critical uncertain factors in its risk analysis in this IRP filing.

D. Paragraph 4 CSR 240-22.070(10)

In 4 CSR 240-22.070(10), the utility is required to "develop, document and officially adopt a resource acquisition strategy. This means that the utility's resource acquisition strategy shall be formally approved by the board of directors, a committee of senior management, an officer of the company or other responsible party who has been duly delegated the authority to commit the utility to the course of action described in the resource acquisition strategy."

Paragraph 4 CSR 240-22.070(10) identifies five components that must be included in the officially adopted resource acquisition strategy. These components are as follows:

- (A) A preferred resource plan selected pursuant to the requirements of section (6) of this rule;
- (B) An implementation plan developed pursuant to the requirements of section (9) of this rule;
- (C) A specification of the ranges or combinations of outcomes for the critical uncertain factors that define the limits within which the preferred resource plan is judged to be appropriate and an explanation of how these limits were determined;
- (D) A set of contingency options that are judged to be appropriate responses to extreme outcomes of the critical uncertain factors and an explanation of why these options are judged to be appropriate responses to the specified outcomes; and
- (E) A process for monitoring the critical uncertain factors on a continuous basis and reporting significant changes in a timely fashion to those managers or officers who have the authority to direct the implementation of contingency options when the specified limits for uncertain factors are exceeded.

Empire's response to these requirements is contained in V-5 Section 6, "Resource Acquisition Strategy." Empire did not request any variance to requirements of 4 CSR 240-22.060(10).

E. Deficiencies Associated with Paragraph 4 CSR 240-22.070(10)

Empire's filing is deficient in two respects with regards to the requirements detailed in

Paragraph 4 CSR 240-22.070(10): 1) Empire presents an incomplete resource acquisition strategy, and 2) Empire fails to clearly and unambiguously identify critical uncertain factors. In V-5, Section 6, Empire states that "The preferred plan documented in Section 4.0 of this report in conjunction with the implementation plan from Section 5.0 have been accepted and reviewed by Empire's senior management and constitute its Resource Acquisition Strategy." As noted above, a preferred plan and implementation plan are only two of the five required components and are not sufficient to constitute the utility's resource acquisition strategy.

The latter three components required by 4 CSR 240-22.070(10) refer to the critical uncertain factors that have been identified by the utility. Section 6 asserts that there is one critical uncertain factor, "the potential enactment of a carbon tax or carbon cap and trade legislation by the U.S." However, as noted above, the filing elsewhere asserts that there are *four* critical uncertain factors. If there are three additional critical uncertain factors that are not considered in Empire's resource acquisition strategy, it is deficient on a *prima facie* basis.

Assuming that there is only one critical uncertain factor, 4 CSR 240-22.070(10)(C) requires Empire to state the range of carbon taxes or caps that would require a change from the preferred resource plan and to explain how it reached that conclusion. Section 6 states that "Empire personnel and senior management are staying informed of [carbon legislation] developments." (V-5, p. 52) However, the filing fails to state the range of values that would trigger new resource decisions and therefore is deficient in meeting this requirement.

Under 4 CSR 240-22.070(10)(D), Empire is required to describe and explain how it arrived at a "set of contingency options that are judged to be appropriate responses" to this range of carbon taxes or caps that would trigger new resource decisions. Rather than meet this requirement, Empire apparently chooses to defer judgment, stating: "Empire will reexamine its decisions for future system

expansions as the need for additional resources, driven by load growth, and the influence of external factors, primarily environmental, become more evident." (V-5, p. 52) Empire fails to state what contingency options would be appropriate responses to "extreme values" of carbon legislation or the other three possible critical uncertain factors and therefore is deficient in meeting this requirement.

Under 4 CSR 240-22.070(10)(E), Empire is required to describe its process for monitoring the range of carbon taxes or caps defined in 4 CSR 240-22.070(10)(C) and reporting to "those managers or officers who have the authority" to implement the contingency options defined in 4 CSR 240-22.070(10)(E). Because 4 CSR 240-22.070(10)(C) is built on the previous two requirements, Empire's filing is deficient in meeting this requirement as well.

Finally, 4 CSR 240-22.070(10) requires all five components of the resource acquisition strategy to be "formally approved by the board of directors, a committee of senior management, an officer of the company or other responsible party who has been duly delegated the authority to commit the utility to the course of action described in the resource acquisition strategy." Section 6 states that Empire's senior management reviewed and accepted the first two components of the resource acquisition strategy, the preferred resource plan and implementation plans. However, the filing does not state or document that Empire's senior management ever reviewed or approved any proposals for monitoring the critical uncertain factors or contingency options. Unless such documentation is provided, the filing must be considered deficient with respect to this requirement as well.

F. Proposed Remedy for Deficiencies Associated with Paragraph 4 CSR 240-22.070(10)

Empire should provide a complete resource acquisition strategy in this IRP filing. Empire should provide documentation that Empire's senior management have committed to review and officially approve a process for monitoring and reporting critical uncertain factors and a set of

contingency options that are judged to be appropriate responses to extreme outcomes detected in this monitoring process. These shall fully meet the requirements of 4 CSR 240-22.070(10).

VI. Conclusion

MDNR respectfully files its review of Empire's Integrated Resource Planning filing in the above-styled matter and requests Empire and the Commission to adopt its recommendations.

Respectfully submitted,

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